

WHAT IS CLAIMED IS:

1        1. A reflection-type liquid crystal display comprising:  
 2        a transparent first substrate;  
 3        a transparent electrode provided on said transparent first  
 4        substrate;  
 5        a second substrate;  
 6        an insulator film which is provided on said second substrate  
 7        and also on a surface of which is formed an uneven structure;  
 8        a reflecting electrode which is provided on said insulator  
 9        film in such a shape as reflecting said uneven structure; and  
 10       a liquid crystal layer sandwiched by a side of said  
 11       transparent electrode formed on said first substrate and a side  
 12       of said reflecting electrode provided on said second substrate;  
 13       wherein said insulator film includes a first insulating  
 14       layer in which a large number of depressions are irregularly  
 15       arranged which are isolated (as surrounded by protrusions) and a  
 16       second insulating layer which covers said first insulating layer  
 17       entirely.

1        2. The reflection-type liquid crystal display according to  
 2        Claim 1, wherein said depressions are constructed by a part  
 3        surrounded by a large number of stripe-shaped protrusions  
 4        arranged irregularly.

1        3. The reflection-type liquid crystal display according to  
 2        Claim 1, wherein said uneven structure is formed by a repetition  
 3        of an irregular shape which is given in units of one picture element  
 4        or more.

1 4. The reflection-type liquid crystal display according to  
2 Claim 1, wherein said depressions and said protrusions each has  
3 a smooth sectional shape formed by melting.

1 5. The reflection-type liquid crystal display according to  
2 Claim 1, wherein:  
3 a liquid crystal driving switching element is provided on said  
4 second substrate; and  
5 said insulator film serves also as a protection film for said  
6 switching element.

1 6. The reflection-type liquid crystal display according to  
2 Claim 5, at least one of said first insulating layer and said second  
3 insulating layer covers at least one of a drain wiring line and  
4 a gate wiring line of said switching element.

1 7. The reflection-type liquid crystal display according to  
2 Claim 1, wherein at least one of said first insulating layer and  
3 said second insulating layer has photo-absorbancy.

1 8. The reflection-type liquid crystal display according to  
2 Claim 1, wherein:  
3 a liquid crystal driving switching element is provided on  
4 said second substrate; and  
5 a contact hole is formed in said insulator film for  
6 electrically interconnecting said liquid crystal driving  
7 switching element and said reflecting electrode.

1 9. The reflection-type liquid crystal display according to

2 Claim 1, wherein said first insulating layer is made of an organic  
3 or inorganic resin having photosensitivity.

1 10. The reflection-type liquid crystal display according  
2 to Claim 1, wherein said second insulating layer is made of an  
3 organic or inorganic resin having photosensitivity.

1 11. A method for manufacturing a reflection-type liquid  
2 crystal display including: a transparent first substrate, a  
3 transparent electrode provided on said transparent first  
4 substrate, a second substrate, an insulator film which is provided  
5 on said second substrate and also on a surface of which is formed  
6 an uneven structure, a reflecting electrode which is provided on  
7 said insulator film in such a shape as reflecting said uneven  
8 structure, and a liquid crystal layer sandwiched by a side of said  
9 transparent electrode formed on said first substrate and a side  
10 of said reflecting electrode provided on said second substrate,  
11 wherein said insulator film includes a first insulating layer in  
12 which a large number of depressions are irregularly arranged which  
13 are isolated as surrounded by protrusions and a second insulating  
14 layer which covers said first insulating layer entirely, said  
15 method comprising the steps of:

16 forming said first insulating layer;  
17 forming, as a photolithography step, a resist pattern on said  
18 first insulating layer;  
19 etching said first insulating layer;  
20 removing a residual resist film left on said first insulating  
21 layer;  
22 melting by heat treatment said first insulating layer thus

23 etched, to thereby smooth said uneven structure; and  
24 forming said second insulating layer on said first  
25 insulating layer thus melted.

1 12. A method for manufacturing a reflection-type liquid  
2 crystal display including: a transparent first substrate, a  
3 transparent electrode provided on said transparent first  
4 substrate, a second substrate, an insulator film which is provided  
5 on said second substrate and also on a surface of which is formed  
6 an uneven structure, a reflecting electrode which is provided on  
7 said insulator film in such a shape as reflecting said uneven  
8 structure, and a liquid crystal layer sandwiched by a side of said  
9 transparent electrode formed on said first substrate and a side  
10 of said reflecting electrode provided on said second substrate,  
11 wherein said insulator film includes a first insulating layer in  
12 which a large number of depressions are irregularly arranged which  
13 are isolated as surrounded by protrusions and a second insulating  
14 layer which covers said first insulating layer entirely, said  
15 method comprising the steps of:

16 forming said first insulating layer of an organic or  
17 inorganic insulating material having photosensitivity;

18 forming an uneven-element pattern on said first insulating  
19 layer by photo-exposure;

20 etch-developing said first insulating layer;

21 melting by heat treatment said first insulating layer thus  
22 etch-developed, to thereby smooth said uneven structure; and

23 forming said second insulating layer on said first  
24 insulating layer thus melted.

1 13. A method for manufacturing a reflection-type liquid  
2 crystal display including: a transparent first substrate, a  
3 transparent electrode provided on said transparent first  
4 substrate, a second substrate, an insulator film which is provided  
5 on said second substrate and also on a surface of which is formed  
6 an uneven structure, a reflecting electrode which is provided on  
7 said insulator film in such a shape as reflecting said uneven  
8 structure, a liquid crystal layer sandwiched by a side of said  
9 transparent electrode formed on said first substrate and a side  
10 of said reflecting electrode provided on said second substrate,  
11 a liquid crystal driving switching element provided on said second  
12 substrate, a contact hole formed in said insulator film for  
13 electrically interconnecting said liquid crystal driving  
14 switching element and said reflecting electrode, wherein said  
15 insulator film includes a first insulating layer in which a large  
16 number of depressions are irregularly arranged which are isolated  
17 as surrounded by protrusions and a second insulating layer which  
18 covers said first insulating layer entirely, said method  
19 comprising the steps of;

20 forming said second insulating layer of an organic or  
21 inorganic insulating material having photosensitivity;

22 forming a pattern used to form said contact hole in said  
23 second insulating layer; and

24 performing etch-developing on said second insulating layer,  
25 to thereby form said contact hole.

add A2